



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application Of: Frame, Anne D.)	Group Art Unit:	1654
)		
Serial No.: 10/500,098)	Examiner:	Patricia Leith
)		
Filed: 12/17/02)	Attorney Docket No.:	94756/4
)		
For: Anti-bacterial Plant Compositions)		

DECLARATION OF O. DAVID SPARKMAN UNDER 37 C.F.R. §1.132

Assistant Commissioner for Patents
And Trademarks
Washington, D.C. 20231

Dear Sir:

I, O. David Sparkman, declare and state:

1. I am a consultant in analytical chemistry and an adjunct professor of chemistry at the University of the Pacific, Stockton, CA, USA. I have consulted with the National Institute of Standards and Technology (NIST), Mass Spectrometry Data Center on a continuous basis since 1995. I am also the manager of the Pacific Mass Spectrometry Center in the Chemistry Department of the University of the Pacific and have held this position since 1999.

2. I have worked in the field of small molecule mass spectral analysis for more than 40 years. I have authored books on mass spectrometry, book chapters on the subject of spectral analysis, published peer-reviewed articles on the interpretation of mass spectra and taught the subject as continuing education courses for the American Chemical Society for more than 30 years and to university students. My *Curriculum Vitae* is attached.

3. I have read documents that appear in the prosecution file of U.S. Application Ser. No. 10/320,492 ("the '492 application"), including the originally filed application, the most recent round of correspondence between the USPTO and the applicant's representative, and a Chemical Abstracts Services (CAS) registry entry for the compound cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl. I understand that similar issues may arise in the co-pending application Ser. No. 10/500,098, whose specification is identical to the specification of the '492 application.

4. I noted the instructions in the specification that the compounds were identified by comparison of the profile (mass spectrum) to the mass spectra of known compounds and preferably to compound mass spectra in the "NIST 129K Mass Spectroscopy [*sic*] Library." I concluded that the mass spectral database used by the applicants was the version of the NIST/Environmental Protection Agency (EPA)/ National Institutes of Health (NIH) Mass Spectral Database published by NIST in 1998 and distributed by Hewlett-Packard (now Agilent Technologies) in a proprietary format under the name NIST129K.L and searched that database. I looked for the compound that corresponds to "cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl" in this version and distribution of the NIST/EPA/NIH Mass Spectral Database using the Agilent technologies MSD ChemStation software. In particular I searched by the equivalent and truncated search term, "cobaltocene, 1,1,2,2,3,3". "Cobaltocene, 1,1,2,2,3,3" produced only one match, cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl. I repeated these searches using the NIST Mass Spectral (MS) Search Program and the 1998 version of the NIST/EPA/NIH Mass Spectral Database and obtained the same results. These same searches using the NIST MS Search Program were also performed using the 2002 and 2005 versions of the NIST/EPA/NIH Mass Spectral Database, again with exactly the same results. Attached are printouts of the search

results using the NIST MS Search Program with the 1998 version of the NIST/EPA/NIH Mass Spectral Database.

5. I conclude that: 1) even if a person skilled in the science of mass spectrometry was unsure of the identity of the compound in the specification of the '492 application because of the apparent typographical error, that person would resort to searching the NIST/EPA/NIH Mass Spectral Database for a cobalt containing metallocene having modifications in at least positions 1,1',2,2',3,3', just as I did; and 2) that search would result in only one clear, unambiguous, compound, cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl. This is the only compound in the NIST/EPA/NIH Mass Spectral Database that can reasonably match "cobaltacene, 1,1',2,2',3,3',4,4'-octgomet." It first appeared in the NIST/EPA/NIH Mass Spectral Database in the year 1998. It was provided to NIST by a company called Chemical Concepts.

6. I took the analysis one step further. I asked "what is the likelihood that the inventor might have misjudged and incorrectly identified cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl? In other words, just how similar is the profile of cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl to the profile of other compounds used as markers in the library? And, if there are others that are similar, could that, somehow, then suggest an explanation for the nomenclature the applicant used? When I compared the mass spectrum of cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl with those of the other 163,198 compounds in the 2005 edition of the NIST/EPA/NIH Mass Spectral Database, I concluded that there are no other compounds in the Database with a confusingly similar mass spectrum. The closest match was only about 65% similar. Therefore, it is very unlikely that the applicant could have confused the compound he purified with any other compound in the database. Clearly, the applicant had in mind cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl.

7. I note that the editors of the CAS registry have reached the same conclusion I reached, i.e. that "cobaltacene, 1,1',2,2',3,3',4,4'-octgomet" and "cobaltacene octgomet" refer to cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl. Namely, the CAS registry entry for cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl refers to the applicant's originally filed patent application and indicates that "cobaltacene octgomet (sic)" is an example in the literature of the use of the compound cobaltocene, 1,1',2,2',3,3',4,4'-octamethyl.

8. I declare further that all statements made herein are of my own knowledge and are considered by me to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,



Date: 17 April 2008

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CURRENT POSITION:

Consultant to National Institute of Standards and Technology (NIST) in mass spectrometry (since 1994), consultant to other government agencies and industry in mass spectrometry and chemistry, Short Course Instructor for LC Resources, and Adjunct Professor of Chemistry and Manager of the Chemistry Department's Mass Spectrometry Facility at the University of the Pacific (Stockton, California). A confidential list of selected consulting clients will be provided on request. My current interests are in the area of applying existing and new technology to the automated computerized identification of organic substances from non-electron ionization mass spectral data. I am experienced in the analytical chemistry of organic compounds using a variety of instrumental techniques, the development of computer software for mass spectrometry and nonchemical uses, the evaluation and interpretation of mass spectral data, and education and training as well as sales and marketing of scientific instrumentation and project management.

EDUCATION:

Educated in chemistry at the University of North Texas, Denton, Texas, 1961–1966 (then North Texas State University).

1965 Summer – NSF Undergraduate Fellowship in biochemistry at Oklahoma State University, Stillwater, Oklahoma.

Numerous short courses in chemistry and computer techniques beginning with the first ACS short course taught: *Spectrometric Identification of Organic Compounds* by Silverstein and Bassler, 1965.

EXPERIENCE:

1994 to present

Consultant in the field of organic mass spectrometry. This activity has included work with the National Institute of Standards and Technology (United States Government Department of Commerce) on the evaluation of the NIST/EPA/NIH Mass Spectral Database and the development and evaluation of the Windows and DOS versions of the NIST Mass Spectral Search Programs. The NIST contract has included the preparation of manuals for both programs and the development and evaluation of tools to enhance the interpretive powers of the Database and the programs. Consulting was provided to NIST on features that were required to make these software packages marketable. Marketing and sales support was also provided to NIST through developing and maintaining relationships with mass spectrometry instrument manufacturers and other resellers. In addition, work was carried out with various distributors as to how concepts in the Search Programs and the Database itself could be applied to non-electron ionization data such as spectra produced by collisionally activated dissociation of ions generated from atmospheric pressure ionization sources.

Consulting in this field also provided marketing and product development support for various mass spectrometry manufacturers, training of individual groups on the use of specific GC/MS and LC/MS products, and providing marketing support to the American Chemical Society on Continuing Education courses. Some custom programming in the Varian Saturn GC/MS Procedure Language was also carried out during this period.

The teaching of courses in mass spectrometry (for the ACS from 1978 to 2006, now for LC Recourses) involves four different courses, offered a total of 10–12 times per year. The course-teaching activity involves the continued update of manuals.

Adjunct Professor of Chemistry, University of the Pacific, Stockton, California, since 1999, teaching graduate courses in mass spectrometry and analytical chemistry and directing graduate studies leading to Ph.D and Masters degrees in chemistry. The Mass Spectrometry Facility at the University of the Pacific currently has a JEOL GCmate double-focusing mass spectrometer with EI, CI, and LINK scan capability, and a Resolving Power of 5,000 (10% valley) at maximum sensitivity; JEOL LCmate with APCI and electrospray interfaces, LINK scan capability, and a Resolving Power of 5,000 (FWHM); Shimadzu/Kratos AXMIA CFR Plus MALDI/Curved Field Reflectron TOF, R=20,000; a Varian Saturn IV quadrupole ion trap GC-MS with EI, CI, SIS, and MS/MS options; a Varian 1200 L triple quadrupole instrument with electrospray and APCI; a Varian 4000 GC/MS; a Varian 200 GC/MS; an Agilent 6890/5975 GC/MS; a Shimadzu QP 2010 LC/MS with ESI; and JEOL AccuTOF with ESI, APCI, and DART.

1990 to 1994

Product Manager for the Saturn Ion Trap GC/MS product line of **VARIAN ASSOCIATES, CHROMATOGRAPHIC SYSTEMS BUSINESS**. Responsibilities included setting product definition and working with Research and Development for their implementation. Additional responsibilities involved market evaluation, price setting, product-enhancement definition, coordination with

manufacturing, technical assurances and worldwide sales force for shipment scheduling and product improvement and cost reduction, training and support of all technical specialists and the worldwide sales force, and development of promotional materials such as brochures and advertising. During this time, two new models of the Saturn GC-MS (Saturn II and Saturn 3) were introduced along with four versions of the software, which included selected-ejection chemical ionization (SECI) and MS/MS (the Saturn 4D MS/MS option). Sales grew at a rate of 25% per year over the three-year period ending in 1994. Prices were decreased by 30%, whereas company standards for margins were maintained.

1989 to 1990

Trainer for GC/MS in the Marketing Department of **VARIAN ASSOCIATES, CHROMATOGRAPHIC SYSTEMS BUSINESS**. This position involved the training of the worldwide sales force and technical specialists for the induction of the new product line of ion trap GC/MS instrumentation. Sales training was held in the Walnut Creek office and various locations throughout the world. Important attention was paid to the preparation of material and presentations to allow for easy understanding by those who did not have English as their first language. Training not only involved the informing of technical aspects of the product and the product relative to the competition, but also the motivation of the sales people to be successful with the product. Various product enhancements were designed and implemented during this time, such as the Saturn Quick Reference Guide for Interpretation of Mass Spectra and the Saturn Help Screens manual. This position involved support of the Field Marketing position.

I wrote and revised all the sales training materials used domestically and in foreign markets by both the Varian sales force and the reps. In addition, I designed and wrote a customer course manual along with a manual for the use of the Saturn GC/MS software internal programming language (Procedures Language Manual).

1983 to 1989

President of **J & S INFORMATION SYSTEMS, INC.** providing system integration solutions in business and scientific areas. Responsibilities included development and implementation of proposals utilizing management information system skills for process instrumentation control, scientific instrument design, and routine business management procedures. The company also specialized in field sales force automation. Several training programs were developed for the use of customized sales force automation software such as ACT. The responsibilities also included management of a staff of four software engineers as well as support personnel and all normal aspects of a small business.

1982 to 1983

Mass Spectrometry Product Manager for **JEOL USA, INC.**, the U.S. marketing organization of a Japanese analytical instrument manufacturer. Duties included setting specifications for high-resolution sector-type mass spectrometry and GC/MS/DS instrumentation. In addition, the responsibility for marketing strategy, sales support, and recommending U.S. pricing with direct sales activity were included. Direction of U.S.-based software and data system hardware development required a major portion of the job activities.

1977 to 1982

Vice President of Sales and Marketing for **RDS, INC.**, the U.S. subsidiary of the French manufacturer of Gas Chromatography/Mass Spectrometry instrumentation and GC/MS Data Systems, **NERMAG, S.A.** The company was also known as

NERMAG and Delsi NERMAG in the U.S. Duties included establishing the U.S. company; direction of U.S. sales activity, which included four sales people, two service engineers, and three inside support persons; direction of SADR software development under OS/8 on the DEC PDP-8 minicomputer; and introduction of the **RIBERMAG R10-10 GC-MS** to the U.S. market. The R10-10 was introduced as a \$200,000 research-grade quadrupole GC-MS in 1979. By 1982, 50 instruments had been sold and installed in the U.S. This was in addition to an installed base of over 100 data systems used with other manufacturers' mass spectrometers.

- 1976 to 1977 Consultant in Chemical Instrumentation and GC/MS applications with **NERMAG, S.A.**, formerly **RIBER S.A.**, French manufacturer of Gas Chromatography/Mass Spectrometry instrumentation, in the area of biochemical and environmental application and data system design: Paris, France.
- 1975 to 1976 Sales and Marketing of Gas Chromatography/Mass Spectrometry Data Systems for **SYSTEM INDUSTRIES, INC.** throughout the U.S., Canada, and Europe: Sunnyvale, California. This product was acquired by **NERMAG, S.A.**
- 1974 to 1975 Research Associate in Environmental Water Chemistry for the **INSTITUTE OF APPLIED SCIENCES** at North Texas State University: Denton, Texas.
- 1973 to 1974 Manager, Chemistry Section, for an environmental and defense contract research firm, **HOUSTON RESEARCH, INC.**: Houston, Texas.
- 1969 to 1973 International Product Manager and Assistant to Vice President of Legal Affairs for manufacturer of pesticide products, **THURON/ZOECON INDUSTRIES, INC.**: Dallas, Texas.
- 1967 to 1969 Laboratory Director and Vice President of analytical testing laboratory and consulting firm, **ANALYTICAL CONSULTANTS, INC.**: Dallas, Texas.
- 1966 to 1967 Analytical Chemistry Manager for **OIL WELL SERVICES COMPANY, THE WESTERN COMPANY OF NORTH AMERICA, INC.**: Dallas, Texas.

The positions at the Western Company, Analytical Consultants, and Thuron Industries, involved the management of government contracts for the Office of Naval Research in Thousand Oaks, California.

OTHER ACTIVITIES:

- 2008 Recipient of the American Chemical Society's Analytical Chemistry Division's Award for Distinguished Service in the Advancement of Analytical Chemistry.
- An American Chemical Society instructor in mass spectrometry from 1978 until 2006. An Instructor for LC Resources from 2006 to the present. Currently, there are four different courses being offered by the LC Resources under my direction: **Interpretation of Mass Spectra and Liquid Chromatography/Mass Spectrometry: Fundamentals and Applications** (two- and three-day courses), **Interpretation of Mass Spectra: An Interactive Web Course** (duration 6 weeks; 12 sessions since 2002), and a 5-day laboratory course **Chromatography/Mass Spectrometry Principles and Practice – Featuring the Latest in GC/MS and LC/MS** – one session each year (formerly **Mass Spectrometry: Principles and Practice**). In addition to 8–10 public sessions offered by LC Resources per year, a number of private sessions have been presented to major chemical and pharmaceutical companies, state and local police agencies, and mass spectrometry instrument manufacturers.
- Member of the Executive Committee of the Subdivision of Chromatography of the Analytical Chemistry Division of the American Chemical Society (an elected position).
- Member-At-Large for Education for The American Society for Mass Spectrometry (an elected position) 2004–2006.
- Book Review Editor for the *European Journal of Mass Spectrometry*.

- Writer and/or Reviewer for the *Journal of the American Society for Mass Spectrometry*, *Journal of Chemical Information and Computer Sciences*, *Spectroscopy*, and *Journal of Mass Spectrometry*.
- Member of the Editorial Advisory Boards of the *European Journal of Mass Spectrometry*; the John Wiley *Encyclopedia of Environmental Analysis and Remediation*; the John Wiley *Encyclopedia of Analytical Chemistry: Instrumentation and Applications*.
- Mass Spectrometry Section Editor for the John Wiley *Encyclopedia of Analytical Chemistry: Instrumentation and Applications* (published October 2000) and currently the electronic version.
- Past Member of the Editorial Advisory Board of *GC/MS UpDate Part A: Environmental*; *GC/MS UpDate Part B: Biomedical, Clinical, Drugs* (1995–2003).
- Past Member of the Editorial Advisory Board of the *Journal of the American Society for Mass Spectrometry* (1998–2003).
- Past President and past Program Chairman of Bay Area Mass Spectrometry.
- Past Member of the Sanibel Committee of the American Society for Mass Spectrometry (1999–2001).
- Past Member of the American Society for Mass Spectrometry Publication Committee.
- Past Member of the Am. Soc. for Mass Spectrom. Corp. Members Advisory Committee (1995–2001).
- Faculty Advisor to the Beta Pi Chapter of Alpha Chi Sigma at the University of the Pacific.

PUBLICATIONS AND PRESENTATIONS:

I have presented numerous technical papers and posters on various aspects of organic mass spectrometry at the ASMS Annual Meeting and the Pittsburgh Conference over the past 40 years. The following is a list of publications and presentations from 1994 to the present:

1. Co-organizer with Facundo Fernandez (Georgia Institute of Technology) of 2007 ASMS Fall Workshop “The Art of Open Air Ionization on Surfaces” held at the Chemical Heritage Foundation, Philadelphia, PA, November 8-9, 2007.
2. Presented “Harold Urey’s Influence on Analysis by DART and DESI” at ASMS Fall 2007 Workshop, Philadelphia, PA November 8, 2007.
3. Teresa M. Vail, O. David Sparkman, Patrick R. Jones, "Rapid and Unambiguous identification of Melamine in Contaminated Pet Food Based on Mass Spectrometry with Four Degrees of Confirmation", *Journal of Analytical Toxicology*, **2007**, *31*, 304-312
4. “Rapid In-Source Methods for DART-interface TOFMS Determination of Structural Information” Teresa M. Vail¹; Robert B. Cody²; O. David Sparkman¹; Patrick R. Jones¹, ¹University of the Pacific, Stockton, CA; ²JEOL USA, Inc., Peabody, MA, *Proceedings of the 55th ASMS Conference on Mass Spectrometry and Allied Topics*; Indianapolis, IN, **2007**.
5. “Direct Comparison of the H/D Exchange Rates of Methyl Group Hydrogens on Macrocyclic Ligands of Ni Complexes by Mass Spectrometry” Chang-nan Chen¹; Jianhua Ren²; O. David Sparkman²; Patrick R. Jones², ¹Chaoyang University of Technology, Taichung, TAIWAN; ²University of the Pacific, Stockton, CA, *Proceedings of the 55th ASMS Conference on Mass Spectrometry and Allied Topics*; Indianapolis, IN, **2007**.
6. “A New Mass Spectrometric Method for the Assay of N⁸-Acetylspermidine Deacetylase” Yongyuan Zhao; James W. Blankenship; JianHua Ren; O. David Sparkman; Patrick R. Jones University of the Pacific, Stockton, CA, *Proceedings of the 55th ASMS Conference on Mass Spectrometry and Allied Topics*; Indianapolis, IN, **2007**.

7. "Mass Whatever! Explaining The Significance and Impact of Mass Spectrometry in Society" Donald H. Chace¹; David Sparkman², ¹Pediatrics Analytical, Bridgeville, PA; ²Consultant, Antioch, CA, *Proceedings of the 55th ASMS Conference on Mass Spectrometry and Allied Topics*; Indianapolis, IN, **2007**.
8. "William L. Budde: A Retrospective" *Proceedings of the 55th ASMS Conference on Mass Spectrometry and Allied Topics*; Indianapolis, IN, **2007**.
9. United States Patent 7,196,525 Issued 3/27/2007 to Sparkman, O. David and Steven M. Colby "Sample Image" using DART and DESI.
10. J. Throck Watson and O. David Sparkman *Introduction to Mass Spectrometry: Instrumentation, Applications, and Strategies for Data Interpretation*, 4th ed., June 2007, John Wiley & Sons, Chichester, U.K., in-press ISBN: 978-0-470-51634-8.
11. "Mass Spectrometry PittCon 2007" *J. Am. Soc. Mass Spectrom.* **2007**, 18(6), 1146-1159.
12. Patrick R. Jones, O. David Sparkman, Teresa Vail, Robert B. Cody, Changnan Chen "Additional Real Time Structural Information" Oral Presentation Number 2510-6, O. David Sparkman presenting, PittCon Conference & Expo 2007, March 1, 2007.
13. "Forensic Applications of DART and DESI Surface Analysis Mass Spectrometry" A Presentation to the California Section of the American Chemical Society, February 22, 2007.
14. "Review MassFinder 3" (A Software Program Including a Collection of EI Mass Spectra of Essential Compounds) *J. Am. Soc. Mass Spectrom.*, **2007**, 18(6), 1137-1144..
15. A Review of "Identification of Essential Oil Components by Gas Chromatography/Mass Spectrometry" 4th ed. (A Collection of EI Mass Spectra of Essential Compounds) *J. Am. Soc. Mass Spectrom.* **2007**, 18(4), 803-806.
16. "Identification of Unknown EI Mass Spectra Using Library Searches and EI Mass Spectral Databases" in Chapter 3 "Ionization of Gas-Phase Molecules by Particles and High Temperature" Sparkman, O.D. *The Encyclopedia of Mass Spectrometry, Volume 6, Fundamentals of and Applications to Organic (and Organometallic) Compounds*; Michael L. Gross, Ed. and Michael L. Gross, Richard Caprioli, Editors-In-Chief; Elsevier: Oxford, U.K., **2007**.
17. "Using Computer Aids in the Identification of Unknown Mass Spectra Obtained with MS/MS from ESI and APCI: A Guided Tutorial" A Web Seminar Presented through Spectroscopy, an Advanstar Publication, January 24, 2007. On Demand Digital Archive available until August 13, 2007 (<https://online-e-events.com/Advanstar/Spectroscopy.nsf/Events/massspectra>).
18. "New Frontiers in Mass Spectrometry" *Spectroscopy Europe*, Vol. 18, No. 4, August/September 2006, S3.
19. "DART - A New Type of In Situ Mass Spectrometry: No Sample Prep MS" An Auto Seminar Presented through Spectroscopy, an Advanstar Publication, June 7, 2006. (<http://www.shopadvanstar.com/products/sp-sdar100.html>).

20. "Analysis of Glue Droplets on Spider Egg Case Silk Using MALDI/TOF/TOF Mass Spectrometry" Xiaoyi Hu, Jing Yuan, Arnold M. Falick, Craig A. Vierra, Anne M. F. Moore, O. David Sparkman, Patrick R. Jones *Proceedings of the 54th ASMS Conference on Mass Spectrometry and Allied Topics*; Seattle, WA, **2006**.
21. "Quantitative Analysis of POPs Plastic Debris in the Ocean" Urja V. Narayan, Lorena M. Rios, Charles Moore, Patrick R. Jones, O. David Sparkman *Proceedings of the 54th ASMS Conference on Mass Spectrometry and Allied Topics*; Seattle, WA, **2006**.
22. "Using MS Search Programs/EI Databases in Identification of Compounds that Generate Mass Spectra Regardless of Mass Accuracy or Ionization Technique" O. David Sparkman, Patrick R. Jones, Teresa Vail *Proceedings of the 54th ASMS Conference on Mass Spectrometry and Allied Topics*; Seattle, WA, **2006**.
23. "Evaluation of Chiral Differentiation Using Chemical Ionization in Hybrid Quadrupole Ion Trap Mass Spectrometer" Teresa M. Vail, O. David Sparkman, Patrick R. Jones *Proceedings of the 54th ASMS Conference on Mass Spectrometry and Allied Topics*; Seattle, WA, **2006**.
24. "Mass Spectrometry PittCon 2006" *J. Am. Soc. Mass Spectrom.* **17**, 873–884, **2006**.
25. Sparkman, O. David *Mass Spec Desk Reference*, 2nd ed.; Global View: Pittsburgh, PA, **2006**; 232 pp. ISBN: 0-9660813-9-0.
26. Sparkman, O. David *Mass Spec Desk Reference*, 1st ed.; Global View: Pittsburgh, PA, **2000**, 128 pp, ISBN: 0-9660813-2-3.
27. A Review of "Identification of Essential Oil Components by Gas Chromatography/Quadrupole Mass Spectroscopy" 3rd ed. (A Collection of EI Mass Spectra of Essential Compounds) *J. Am. Soc. Mass Spectrom.* **16(11)**, 1902–1903, **2005**.
28. Xiaoyi Hu, Kristin Kohler, Arnold M. Falick, Ann M. F. Moore, Patrick R. Jones, O. David Sparkman, Craig Vierra, "Egg Case Protein-1: A New Class of Silk Proteins with Fibroin-Like Properties from the Spider" *J. of Biological Chem.* **280(22)**, 21220–21230, **2005**.
29. "Use of a Permanent Magnet FT-ICR Mass Spectrometer in the Undergraduate Curriculum and ICR Mass Spectrometer in the Undergraduate and Graduate Curriculum" O. David Sparkman, Jianhua Ren, Andreas H. Franz, Patrick R. Jones *Proceedings of the 53rd ASMS Conference on Mass Spectrometry and Allied Topics*, San Antonio, TX, **2005**.
30. "Discovery of Novel Spider Silk Fibroin Using *de novo* Peptide Sequencing by MALDI/TOF/TOF Mass Spectrometry and Reverse Genetics" Xiaoyi Hu, Craig Vierra, Arnold M. Falick, O. David Sparkman, Patrick R. Jones *Proceedings of the 53rd ASMS Conference on Mass Spectrometry and Allied Topics*, San Antonio, TX, **2005**.
31. "In vitro metabolism of novel 3-amino-1-tetralone analogs with opioid-related activity by LC-MS/MS" Jing Yuan, Xiaoyi Hu, Brett Williams, David Fries, Zaijie Wang, O.D. Sparkman, Patrick R. Jones *Proceedings of the 53rd ASMS Conference on Mass Spectrometry and Allied Topics*, San Antonio, TX, **2005**.
32. "Techniques for Ion Dissociation (Fragmentation) and Scanning in MS/MS" Watson, J.T. and Sparkman, O.D. *The Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics*; Michael Dunn, Ed.; John Wiley & Sons Ltd: Chichester, U.K., **2005**.

33. "Development of an LC/MS/MS method for N8-acetylspermidine measurements in enzyme assays" Jianhua Ren, Andreas H. Franz, O. David Sparkman *Proceedings of the 53rd ASMS Conference on Mass Spectrometry and Allied Topics*, San Antonio, TX, **2005**.
34. "Mass Spectrometry PittCon 2005" *J. Am. Soc. Mass Spectrom.* **16**(6), 969–978, **2005**.
35. A Review of "Mass Spectrometry: A Textbook" *J. Am. Soc. Mass Spectrom.* **16**(5), 793–795, **2005**.
36. "Rules for Mass Spectral Interpretation: The Standard Interpretation Procedure" in Chapter 7 "Structure Determination of Organic Compounds" Part Two: Structural/Analytical, Watson, J.T.; Sparkman, O.D. *The Encyclopedia of Mass Spectrometry, Volume 4, Fundamentals of and Applications to Organic (and Organometallic) Compounds*; Nico M.M. Nibbering, Ed. and Michael L. Gross, Richard Capriolo, Editors-In-Chief; Elsevier: Oxford, U.K., **2004**.
37. "Structural Identification of Unknowns from ES/APCI CAD Spectra Via the Use of an EI Mass Spectral Database" O.D. Sparkman; P.R. Jones; Jing Yuan; Xiaoyi Hu; C. Brackett *Proceedings of the 52nd ASMS Conference on Mass Spectrometry and Allied Topics*, Nashville, TN, **2004**.
38. "Quantitative determination of three important polyamines in MEL cells by atmospheric pressure chemical ionization-mass spectrometry (APCI-MS)" Jing Yuan; Xiaoyi Hu; J. Blankenship; O.D. Sparkman; P.R. Jones *Proceedings of the 52nd ASMS Conference on Mass Spectrometry and Allied Topics*, Nashville, TN, **2004**.
39. "De novo sequencing of peptides from tarantula spider *Grammostola rosea* silk protein by MALDI/TOF/TOF mass spectrometry" Xiaoyi Hu; A.M. Falick; C. Vierra; Jing Yuan; O.D. Sparkman; P.R. Jones *Proceedings of the 52nd ASMS Conference on Mass Spectrometry and Allied Topics*, Nashville, TN, **2004**.
40. "State-of-the Industry: Innovation and Dynamic Change Characterize the MS Marketplace" *Current Trends in Mass Spectrometry – Supplement to: LC/GC North America and Spectroscopy* **May 2004**, 10–12.
41. "Mass Spectrometry PittCon 2004" *J. Am. Soc. Mass Spectrom.* **15**(6), 942–949, **2004**.
42. A Review of "The Encyclopedia of Mass Spectrometry: Volume 1, Theory and Ion Chemistry" *J. Am. Soc. Mass Spectrom.* **15**(5), 762–767, **2004**.
43. "Understanding Electron Ionization Fragmentation Mechanisms of Long Chain Aliphatic Compounds with Carbonyl Functional Groups" Sparkman, O.D.; Ren, J. *16th International Mass Spectrometry Conference*, Edinburgh, Scotland, **2003**.
44. A Review of "Measuring Mass: From Positive Rays to Proteins" *J. Proteome Research* **2**(4), 446, **2003**.
45. "Flow-Injection LC-MS-MS Method for Simultaneous Quantitation of N¹-Acetylspermidine and N⁸-Acetylspermidine in the Differentiation Process of Murine Erythroleukaemia (MEL Cells)" Yuan, J.; Hu X.; Rajagopalan, V.; Sparkman, O.D.; Blankenship, J.; Jones, P.R. *Proceedings of the 51st ASMS Conference on Mass Spectrometry and Allied Topics*, Montreal, Canada, **2003**.
46. "Identification of Peptides from Eggcase Silk Proteins of *Latrodectus Hesperus*" Hu, X.; Vierra, C.; Falick, A.M.; Yuan, J.; Sparkman, O.D.; Jones, P.R. *Proceedings of the 51st ASMS Conference on Mass Spectrometry and Allied Topics*, Montreal, Canada, **2003**.
47. A Review of "Mass Spectrometry Basics" *J. Am. Soc. Mass Spectrom.* **14**(8), 925–927, **2003**.
48. "Mass Spectrometry PittCon 2003" *J. Am. Soc. Mass Spectrom.* **14**(5), 542–551, **2003**.

49. "American Society for Mass Spectrometry: Evolution of a Scientific Society" *Anal. Chem.* **74**(23) A-Pages, 627A–630A, **2002**.
50. A Review of "Analytical Mass Spectrometry – Strategies for Environmental and Related Applications" *J. Am. Soc. Mass Spectrom.* **13**(7), 898–900, **2002**.
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 American Society for Mass Spectrometry (Since 1977)
 American Association for the Advancement of Science
 Bay Area Mass Spectrometry Society
 Italian Society for Mass Spectrometry
 ACS Advisory Board on Continuing Education
 California Section of the American Chemical Society
 Alpha Chi Sigma (Beta Eta Chapter, 1966)
 The Smithsonian Associates
 Chemical Heritage Foundation Robert Boyle Society since 2004
 The Bolton Society: An Organization of Chemical Bibliophiles
 National Rifle Association (Life Member)

Former Member of: ACS Advisory Board on Software
 ASMS Corporate Members Advisory Committee
 ASMS 50th Anniversary Committee

Served on Dissertation and Thesis Committees of:

Xiaoyi (Tiger) Hu, M.S. 2003 “Development of a new method for quantitation of chlorpyrifos and diazinon by mass spectrometry”;

Xiaoyi Hu, Ph.D. 2004, “Elucidation of spider silk peptide sequences, protein sequence, and gene identification”, did internship at Galileo Labs and at Varian Inc., then at Guidant, Inc., a Fortune 500 Company, which was bought by Abbott Vascular, Inc where he is a senior chemist.

David Hawke, Ph.D. 2004, “Use of isotope label coded tags for the identification of regulation of polyamine-level controlled proteins in murine ethyroleukemia cells” now working as director of proteomics mass spectrometry laboratory, M.D. Anderson Hospital Cancer Research Facility, Houston, Texas

Claudia Brackett, Ph.D. 2005, “Contaminants and Decomposition Products in Naturally Aged Pentaerythrol Tetranitrate (PETN)”, Faculty member Modesto California College.

Jing Yuan, Ph.D. 2005, “Quantitation and identification of polyamine pathway products with and without specific enzyme inhibitors” did internship at Celera Pharmaceuticals and is now at Exelixis as a Research Scientist.

Teresa Vail, M.S. 2007, “Evaluation and Method Development for Open-Air Ionization on Surfaces”, with Professor O. David Sparkman, is now in a doctoral program.

Matthew Curtis, Ph.D. candidate, “New Methods for Separation, MS/MS, Quantitation and Identification; Mechanisms of Helium Metastable Initiated Reactions in an Open-Air Ion Source”